

than the average. The night of the 2-3d exceptionally dense fog prevailed along the New York and south New England coasts, attending the passage of low area I from the Saint

Lawrence Valley to Nova Scotia. The fog noted west of the 40th meridian was generally encountered in the east quadrants of general storms.

TEMPERATURE OF THE AIR (expressed in degrees Fahrenheit).

The distribution of mean temperature over the United States and Canada for November, 1892, is exhibited on Chart II by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the average for the several districts. The normal for any district may be found by adding the departure to the current mean when the temperature is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Weather Bureau represents the mean of the maximum and minimum temperatures.

The mean temperature was highest over extreme southern Florida and in the Colorado Desert, Cal., where it was above 70, and the mean values were above 60 over the Florida Peninsula, along the immediate Gulf coast, over southeastern Texas, in the lower Colorado and Gila valleys, and generally over California south of the 35th parallel. The mean temperature was lowest in Manitoba, where it was below 15. The mean readings were below 20 in the Valley of the Red River of the North, north of a line traced from Georgian Bay to the north shore of Lake Michigan, thence to southeastern Wisconsin, thence to eastern South Dakota, and thence to northwestern Montana, where they were below 30.

DEPARTURES FROM NORMAL TEMPERATURE.

The mean temperature was below the normal east of a line traced from northwestern Montana southeastward to the middle Gulf coast. Over the Rocky Mountain and plateau regions, in the middle and south Pacific coast states, and over eastern Maine and the Canadian Maritime Provinces the mean temperature was above the normal. The most marked departure below the normal temperature was noted in the western Saskatchewan valley, where it was from 6 to 10; in the middle and upper Mississippi, Ohio, and upper Red River of the North valleys and over the southwestern lake region the month was 4 to 6 colder than usual. The greatest departure above the normal temperature was reported at stations in the middle and northern plateau regions and eastern New Brunswick, where it exceeded 4.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for November for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for November, 1892; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for November during the period of observation and the years of occurrence:

State and station.	(1) Normal for the month of Nov.	(2) Length of record.	(3) Mean for Nov., 1892.	(4) Departure from normal.	(5) Extreme monthly mean for November.			
					Highest.	Year.	Lowest.	Year.
<i>Arizona.</i>	°	Years	°	°	°		°	
Fort Apache	43.3	21	45.6	+ 2.3	48.1	1873	38.5	1880
Fort Mohave	59.9	20	59.8	- 0.1	66.2	1873	53.4	1880
Whipple Barracks	43.6	20	45.6	+ 2.0	48.4	1875	36.1	1886

Departures from normal temperature—Continued.

State and station.	(1) Normal for the month of Nov.	(2) Length of record.	(3) Mean for Nov., 1892.	(4) Departure from normal.	(5) Extreme monthly mean for November.			
					Highest.	Year.	Lowest.	Year.
<i>Arkansas.</i>	°	Years	°	°	°		°	
Keesees Ferry	47.3	10	45.8	- 1.5	51.2	1890	44.1	1889
<i>California.</i>								
Fort Bidwell	39.5	19	40.1	+ 0.6	46.0	1884	31.9	1876
Riverside	57.5	10	.....	.....	59.7	1884	55.1	1886
<i>Colorado.</i>								
Las Animas	36.6	9	42.6	+ 6.0	42.6	1892	29.4	1889
<i>Florida.</i>								
Merritts Island	68.0	10	66.5	- 1.5	73.3	1883	60.0	1885
<i>Georgia.</i>								
Forsyth	56.5	17	57.6	+ 1.1	61.7	1874, '90	51.0	1880
<i>Idaho.</i>								
Boise Barracks	38.7	18	42.0	+ 3.3	45.8	1885	31.5	1880
Fort Sherman	35.9	8	38.8	+ 2.9	42.6	1890	25.4	1886
<i>Illinois.</i>								
Centralia	40.8	8	.....	.....	46.0	1888	29.0	1880
<i>Indiana.</i>								
Lafayette	39.9	9	36.6	- 3.3	44.6	1890	36.6	1892
<i>Indian Territory.</i>								
Fort Supply	44.1	11	45.0	+ 0.9	48.8	1885	39.2	1889
<i>Iowa.</i>								
Cresco	28.7	20	28.1	- 0.6	34.7	1878	19.2	1880
<i>Kansas.</i>								
Eureka Ranch	39.6	9	.....	.....	44.7	1885	30.3	1887
Independence	43.9	20	44.5	+ 0.6	50.7	1878	33.6	1880
Salina	41.8	10	41.8	0.0	44.5	1887	39.6	1891
<i>Louisiana.</i>								
Grand Coteau	59.5	10	60.6	+ 1.1	64.0	1883	56.2	1889
<i>Maine.</i>								
Orono	33.9	22	37.0	+ 3.1	38.6	1889	27.1	1875
<i>Maryland.</i>								
Cumberland	40.0	21	41.0	+ 1.0	44.7	1883	35.0	1880
<i>Michigan.</i>								
Kalamazoo	37.2	16	35.6	- 1.6	43.4	1890	27.0	1880
<i>Missouri.</i>								
Sedalia	43.7	9	39.8	- 3.9	46.7	1887	38.5	1891
<i>Montana.</i>								
Fort Custer	32.9	13	36.6	+ 3.7	39.9	1890	24.5	1880
<i>Nebraska.</i>								
Fort Robinson	35.6	8	38.3	+ 2.7	40.7	1885	31.8	1886
Genoa (near)	33.6	16	35.4	+ 1.8	39.8	1890	22.6	1880
<i>Nevada.</i>								
Browns	41.1	20	43.4	+ 2.3	46.7	1891	25.8	1880
Carson City	37.5	15	40.3	+ 2.8	42.2	1885	31.4	1881
<i>New Hampshire.</i>								
Hanover	34.1	21	35.1	+ 1.0	37.1	1877	24.8	1873
<i>New Mexico.</i>								
Deming	53.6	11	61.2	+ 7.6	61.2	1892	47.2	1881
Fort Wingate	39.4	21	43.4	+ 4.0	44.4	1891	31.4	1880
<i>New York.</i>								
Cooperstown	34.9	21	34.6	- 0.3	38.5	1876, '77	26.8	1873
Plattsburg Barracks	34.4	21	34.1	- 0.3	39.0	1889	25.3	1873
<i>North Carolina.</i>								
Lenoir	45.2	20	43.4	- 1.8	49.8	1890	39.9	1872
<i>Oklahoma.</i>								
Fort Reno	47.6	9	47.1	- 0.5	51.5	1885	42.7	1889
Fort Sill	47.8	20	48.3	+ 0.5	52.9	1879	36.6	1880
<i>Oregon.</i>								
Bandon	49.2	8	50.2	+ 1.0	52.0	1891	43.0	1886
<i>Pennsylvania.</i>								
Dyberry	34.7	19	34.4	- 0.3	38.3	1883	24.9	1878
Grampian	35.3	21	35.3	0.0	39.2	1890	29.3	1872
Wellsboro	38.3	13	34.1	- 4.2	41.4	1885	34.1	1892
<i>South Carolina.</i>								
Statesburg	53.8	11	52.0	- 1.8	58.2	1890	51.2	1891
<i>South Dakota.</i>								
Fort Sully	30.5	21	31.4	+ 0.9	39.2	1878	21.1	1880
<i>Texas.</i>								
Austin	57.5	20	58.9	+ 1.4	63.2	1883	46.0	1880
Silver Falls	49.2	6	52.1	+ 2.9	52.4	1890	45.3	1889
<i>Utah.</i>								
Terrace	35.6	20	39.5	+ 3.9	46.0	1885	24.1	1880
<i>Vermont.</i>								
Strafford	33.5	19	32.3	- 1.2	37.9	1886	23.4	1873
<i>Virginia.</i>								
Dale Enterprise	46.6	12	41.4	- 5.2	49.6	1888	41.3	1880, 1884
<i>Washington.</i>								
Fort Townsend	43.1	17	44.1	+ 1.0	47.3	1884	39.2	1880
<i>West Virginia.</i>								
Parkersburg	46.4	11	41.5	- 4.9	55.7	1881	40.1	1886
<i>Wisconsin.</i>								
Embarrass	33.6	21	28.2	- 5.4	36.6	1888	22.3	1880
Madison	33.2	15	.....	.....	38.4	1890	27.3	1872
<i>Wyoming.</i>								
Fort Washakie	26.4	8	34.4	+ 8.0	34.5	1890	10.1	1880

YEARS OF HIGHEST MEAN TEMPERATURE FOR NOVEMBER.

At Palestine, Tex., Deming, N. Mex., Denver and Las Animas, Colo., the mean temperature for the current month was the highest reported for November during the respective periods of observation. The highest mean temperature for November was noted generally east of the Mississippi and south of the Ohio Rivers, in the Northwest, and along the middle and south Pacific coasts in 1890; over the middle and northern plateau regions in 1885; over the lower lake region, Pennsylvania, and New York in 1883; along the immediate middle Atlantic and south New England coasts in 1881; in the west Gulf states in 1879, and over the upper lake region and in the middle Missouri valley in 1878.

YEARS OF LOWEST MEAN TEMPERATURE FOR NOVEMBER.

At Nantucket, Mass., Wellsboro, Pa., Kittyhawk, N. C., Lafayette, Ind., and Green Bay, Wis., the mean temperature for the current month was the lowest ever reported for November. The lowest mean temperature for November was noted in the Southwest in 1889; on the north and south Pacific coasts in 1886; on the middle Pacific coast in 1882; and from the Alleghany Mountain range over the central valleys, the Lake region, and the Rocky Mountain and plateau regions in 1880.

MAXIMUM TEMPERATURE.

At Wilmington, N. C., and Charleston, S. C., the maximum temperature was the highest, and at San Francisco and Sacramento, Cal., it was as high as previously reported for November. The highest temperature reported by a regular station of the Weather Bureau for November, 1892, was 90 at Los Angeles, Cal., on the 10th. The maximum temperature was above 80 in South Carolina, Georgia, and Florida, along the middle and west Gulf coasts, over the greater part of Texas, southern and western Arizona, southern California, and in the Sacramento Valley.

In the Lake Superior region the maximum temperature was below 50, and it was 60, or below, on the south New England coast, at Rocky Mountain stations, and on the extreme north Pacific coast. Reports of voluntary observers show maximum temperature above 90 over the southern part of the Florida Peninsula, in the lower Rio Grande valley, in western Arizona, and southern California.

MINIMUM TEMPERATURE.

At Hatteras and Southport, N. C., and Augusta, Ga., the minimum temperature was the lowest, and at Nantucket, Mass., and Keeler, Cal., it was as low as previously reported for November. The lowest temperature reported by a regular station of the Weather Bureau was -22° at Saint Vincent, Minn., on the 22d. Minimum temperature was below zero north of a line traced from western Upper Michigan to central Nebraska, thence to southern Wyoming, and thence to northwestern Montana. At Key West, Fla., the minimum temperature was 60° , and the minimum readings were below 40° over the southern half of the Florida Peninsula and along the west Gulf and middle and south Pacific coasts.

LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather is shown on Chart V by a line traced from the coast of southern Georgia westward to extreme western Texas. The western limit of freezing weather is shown by a line traced from southeastern Arizona over the central valleys of California to western Oregon, thence eastward of the Valley of the Columbia River, and thence to northwestern Washington.

RANGES OF TEMPERATURE.

The greatest daily ranges of temperature are shown in the table of miscellaneous meteorological data. The greatest monthly ranges of temperature were noted in eastern Montana and in South Dakota, where they exceeded 80° . From

that region the monthly ranges decreased eastward to less than 40° on the south New England coast, southeastward to less than 40° over the southern part of the Florida Peninsula and along the west Gulf coast, southward to less than 50° over the southern Rocky Mountain and plateau regions, and westward to less than 30° along the north Pacific coast.

TEMPERATURE, JANUARY TO NOVEMBER.

For the period January 1 to November 30, 1892, the temperature averaged about normal in the lower lake region, Missouri Valley, on the northeast and middle-eastern slopes of the Rocky Mountains, over the southern plateau region, and along the north Pacific coast. In New England, the upper lake region, the extreme northwest, on the southeast slope of the Rocky Mountains, and over the northern plateau region the temperature averaged less than 1° above, and over the middle plateau region it was 1 to 2° above the average. In the middle Atlantic and west Gulf states, the Ohio Valley and Tennessee, the upper Mississippi valley, and on the middle and south Pacific coasts the temperature was less than 1° deficient, and in the south Atlantic and east Gulf states, and at Key West, Fla., it was 1 to 2° below the average for the period named.

PERIODS OF LOW TEMPERATURE.

On the 6th a cold wave advanced from the north Pacific coast over the northeast slope of the Rocky Mountains, the temperature fell 30 to 40° over the Dakotas, a minimum of 20° was noted at Baker City, Oregon. During the 7th the cold wave extended over the middle and lower Missouri, upper Mississippi, and Red River of the North valleys, the temperature fell more than 30° over the Dakotas, at Bismarck, N. Dak., the temperature reached zero, the temperature was 20 to 30° below the normal in the upper Mississippi and lower Missouri valleys, and the line of freezing weather was carried to Oklahoma.

During the 8th the cold wave covered districts from the northern lakes to the Gulf of Mexico, the temperature fell more than 20° in the southern lake region, and in parts of the Ohio Valley and middle Gulf states, the minimum temperature was below zero in the Red River of the North Valley and the eastern Dakotas, and the line of freezing weather was carried to Arkansas and Kentucky. On the 9th the temperature fell 20 or more in the middle Atlantic and New England states, and freezing weather was reported in West Virginia and western Pennsylvania.

From the 13th to 15th a cold wave moved from the northern plateau and middle Rocky Mountain regions to the east Gulf states, carrying the line of freezing weather to Tennessee and central Mississippi. On the 17th a cold wave moved from the southern plateau region over the west Gulf states, the temperature fell 20 to 30° in central and northern Texas and over western Arkansas and northwestern Louisiana, and the minimum temperature was 12 and 16° at Montrose, Colo., and Santa Fe, N. Mex., respectively.

The morning of the 18th this cold wave was supplemented by a cold wave from the Northwest and occupied the region between the Alleghany and Rocky Mountains, the temperature fell 20 to 30° in the west Gulf states and the middle Ohio valley, and the line of freezing weather extended to northern Arkansas. By the morning of the 19th the temperature had fallen to 20° in the Atlantic coast states, and freezing weather was reported in northern Virginia and eastern Tennessee. The morning of the 20th the line of freezing weather was carried to northern Georgia.

From the 20th to the 22d a cold wave moved from the northeast slope of the Rocky Mountains to the Atlantic coast. Attending the passage of this cold wave the temperature fell below zero in the Red River of the North Valley on the 21st; on the 22d the minimum temperature was -10° to

—22 in the Red River of the North Valley, and freezing weather occurred in the northern portion of the east Gulf states; on the 23d the line of freezing weather was carried to east-central Georgia and northern South Carolina.

From the 24th to the 26th a cold wave moved from the middle and northern plateau regions over the central valleys; on the 24th the temperature fell 30 to 50 in western Montana, and the minimum was —16 to —22 in the western Saskatchewan valley; on the 25th the temperature fell 20 to 40 from northern Utah to southeastern Montana, the minimum temperature was zero at Lander, Wyo., and freezing weather was reported at Tucson, Ariz.; on the morning of the 26th a fall of 20 to 30 in temperature was shown from North Dakota to northern Kansas, the minimum was below zero in the Dakotas, and the line of freezing weather was carried to the Ohio River.

FROST.

The first light frost of the season was reported as follows: 1st, Teviston, Ariz. 2d, Crescent City, Cal. 6th, Olympia, Wash. 10th, Austin, College Station, and El Paso, Tex. 13th, Astoria, Oregon. 15th, Alvarado, Fresno, Niles, and Santa Cruz, Cal. 16th, Palermo and Redding, Cal.; Eustis, Fla.; Portland, Oregon. 25th, Duarte, Los Angeles, and Winchester, Cal.

The first heavy frost of the season was reported as follows: 3d, Albert, N. Mex.; Hartley, Tex. 5th, Bushnell, Ill.; Sedan, Kans.; Covington, La.; Woods Holl, Mass.; Block Island, R. I. 6th, Roseburg, Oregon; Philadelphia, Pa.; Norfolk, Va. 7th, Crescent City, Cal. 9th, Grape Vine, Tex. 10th, Delhi, La.; Aurora, Brazoria, Burnet, Childress, Corsicana, Forestburg, Gainesville, Graham, Menardville, Mesquite, Mountain Spring, New Braunfels, Orange, Paris, Round Rock, and Sulphur Springs, Tex. 11th, Evergreen, Eufaula, and Opelika, Ala.; Forsyth, Piscola, and Statesboro, Ga.; Donaldsonville, La.; Agricultural College, Vicksburg, and Yazoo City, Miss.; Charleston, S. C.; College Station, Tex.

12th, Jacksonville, Fla., tender vegetation killed; Poulam and Savannah, Ga.; Southport, N. C. 13th, Arcata, Cal. 14th, Pleasanton, Cal.; Harrisburg, Pa. 15th, Bakersfield, Cal. 16th, Alvarado and Santa Cruz, Cal. 17th, Eureka and Turlock, Cal.; Hillsboro, N. Mex. 18th, San Jacinto, Cal.; Devine, Hallettsville, and Panter, Tex. 20th, Albany, Oregon; Olympia, Wash., considerable damage in exposed places. 23d, Rogers, Ark.; Palestine, Tex. 24th, Hydesville, Redding, Sacramento, Santa Maria, Wheatland, and Willows, Cal.; Darien, Ga.; Kittyhawk, N. C.; Port Royal, S. C.; Walla Walla, Wash. 25th, Peoria, Ariz.; Agnews, Fresno, and San Bernardino, Cal. 26th, Portland, Oregon; Tatoosh Island, Wash. 27th, Natural Bridge, Ariz.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for November, 1892, as determined from reports of more than 2,000 stations, is exhibited on Chart III. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

In November the monthly precipitation is usually greatest on the northwest coast of Washington, where it exceeds 10.00; it exceeds 8.00 along the immediate Pacific coast north of the 40th parallel; it exceeds 4.00 in the Mississippi Valley south of the 36th parallel, along the Gulf coast from Galveston, Tex., to the Florida Peninsula, in an area extending from the west part of the Carolinas over the eastern half of Tennessee, along the North Carolina coast, and along the immediate Atlantic coast north of New Jersey. West of a line traced from the Red River of the North Valley to central Texas the normal precipitation for November is generally less than 1.00, except along the Pacific coast and in the mountains of Idaho and western Montana.

In November, 1892, the monthly precipitation was greatest along the immediate Pacific coast north of the 40th parallel, where it exceeded 10.00. At stations on the Washington and Oregon coasts it exceeded 15.00, and at points on the immediate north Pacific coast it exceeded 20.00. The monthly amount exceeded 8.00 on the south coast of Nova Scotia, on the south New England coast, and in an area covering central Arkansas. Over the greater part of the country south of the Ohio River and east of Texas and Arkansas the monthly precipitation was 4.00 to 6.00. In an area extending from Minnesota, the Dakotas, and eastern Montana to western Texas, and thence over the middle and southern plateau re-

gions, the monthly precipitation was less than 1.00. It was also less than 1.00 over the Florida Peninsula.

DEPARTURE FROM NORMAL PRECIPITATION.

The monthly precipitation was in excess of the November average along the Pacific coast, over the northern Rocky Mountain and northern plateau regions, and thence to Upper Michigan. It was also in excess in the middle and lower Mississippi valleys, in the middle Atlantic states, and over the Canadian Maritime Provinces. Over the middle and southern plateau and southern Rocky Mountain regions, from western and southern Texas to the extreme upper Mississippi valley, from the middle lake region to the south Atlantic coast, over the greater part of New England, in Florida, and along the middle and west Gulf coasts, the monthly precipitation was deficient. The greatest excess in precipitation was noted on the Washington coast, where it was 6.00 to 8.00, and the excess exceeded 4.00 along the Pacific coast north of the 38th parallel, on the south New England coast, and over southern Nova Scotia. The most marked deficiency in precipitation was noted along the south Atlantic and east Gulf coasts, and at Abilene, Tex., where the precipitation was 2.00 or more less than the average amount for November.

Considered by districts the average percentage of the normal in districts where the precipitation was in excess was about as follows: south Pacific coast, 228; middle Pacific coast, 218; north Pacific coast, 177; northeast slope of the Rocky Mountains, 171; northern plateau, 139; New England, 134; middle Atlantic states, 130; extreme northwest, 116; upper lake region, 108. In districts where the precipitation was deficient the percentage of the normal was about as follows: southeast slope of the Rocky Mountains, 31; middle-eastern slope of the Rocky Mountains, and Key West, Fla., 37; middle plateau, 41; south Atlantic states, Missouri Valley, and southern plateau, 58; east Gulf states, 86. In the west Gulf states, the Ohio Valley and Tennessee, the lower lake region, and the upper Mississippi valley, the monthly precipitation averaged about normal.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for No-